Performance Analysis
of
Price Anderson Amendment Act (PAAA) Non-Compliance Tracking System (NTS) and Occurrence Reporting and Processing System (ORPS) Reportable Incidents
Fiscal Year (FY) 2008 1st Quarter
(January 1, 2007 – December 31, 2007)

Report No. 17

Ernest Orlando Lawrence
Berkeley National Laboratory

Office of Contract Assurance
LBNL Directorate

INTRODUCTION

As part of its oversight program required by DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, LBNL identifies operational events, accidents and injuries in order to analyze and trend incidents to determine areas of needed improvement and to ensure the effectiveness of corrective actions to mitigate events and identify recurring events. The Occurrence Reporting Process System (ORPS) performance analysis satisfies the quarterly analysis and trending requirement in DOE Order 231.1A, *Environment, Safety, and Health Reporting*.

This analysis report addresses PAAA NTS- and ORPS-reportable incidents that were identified through the FY08 1st Quarter reporting period, which is defined as January 1, 2007 through December 31, 2007. Hereafter, any reference to the "FY08 1st Quarter reporting period" or "current reporting period" means January 1, 2007 through December 31, 2007.

ANALYSIS METHODOLOGY

The methodology for data analysis of Price Anderson Amendment Act (PAAA) Non-Compliance Tracking System (NTS) - and ORPS-reportable incidents based on the requirements outlined in LBNL/PUB-5519 (3), *Data Monitoring and Analysis Program Manual*, which is part of the institutional Issues Management Program. The Issues Management Program satisfies the data analysis requirements to identify recurring events and prevent more serious events from occurring, which are outlined in LBNL/PUB-5520, *UC Assurance Plan for LBNL*, DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, and DOE O 231.1A, *Environment, Safety and Health Reporting*.

Data analysis reports will be in graphical format, typically runs charts, controls charts and/or Pareto charts in accordance with LBNL/PUB-5519 (3) and will include the analysis of the data for the specified reporting period. This methodology is consistent with the guidance outlined in DOE G 231.1-1, *Occurrence Reporting and Performance Analysis Guide*, Attachment 6, *ORPS Performance Analysis Analytical Techniques*.

Statistical industry standards will be used to identify trends, adverse or otherwise, when analyzing ORPS and PAAA NTS reportable incidents. Based on an existing or potential trend, additional data will be monitored and analyzed to determine the cause of the trend, identify recurring events, and identify adverse conditions that require corrective actions, as applicable.

A statistical trend is defined as:

- One point outside the control limits;
- Two out of three points two standard deviations above or below the baseline average;
- Four out of five points one standard deviation above or below the baseline average;
- Seven points in a row above or below the baseline average; or
- Seven points in a row that are increasing or decreasing

The control chart is used to determine if the number of ORPS- and PAAA NTS-reportable incidents is within an acceptable statistical threshold and if statistical trends are present.

Pareto charts further break down the data by looking at various combinations of source data to determine the major contributions, the distribution of the contributors, and recurring issues. The cumulative data are reviewed, as appropriate, by:

- Trend Code, identified in Attachment 2, which will reveal common causes in dissimilar events
- Division, the organization that contributed to the event/incident
- Report type, ORPS or PAAA NTS
- Subject matter, the primary focus of the event/incident

- Circumstances surrounding the event/incident

This report will typically display the Pareto chart by trend code. The data that contributes to the majority of the instances in a particular trend code is then reviewed for commonalities. Additional Pareto charts will be included, if warranted. If a potential issue is identified during analysis of the data, the appropriate management and Subject Matter Experts (SMEs) will be contacted. Similarly if statistical analysis and distribution analysis indicate the possibility of a recurrent event, the Office of Contract Assurance (OCA) reviews the subject events with the SMEs.

Where incidents are required to be reported to more than one reporting system, they are counted as only one incident. For example, an incident that is PAAA NTS- and ORPS- reportable is considered only one incident even though it was required to be reported to two systems.

EXECUTIVE SUMMARY

During the FY08 1st Quarter reporting period, 32 incidents were analyzed, 10 PAAA NTS-reportable incidents and 22 ORPS-reportable incidents. Seven of these incidents were found to be both PAAA NTS- and ORPS-reportable incidents. Therefore, these seven incidents were counted only once, resulting in the actual number of incidents totaling 25.

While no statistical trend or recurring problem was identified during the FY08 1st Quarter, a detailed review of ORPS reports from the current reporting period indicates that a potential issue regarding waste management exists, which warrants continued monitoring.

For the FY07 4th Quarter reporting period, analysis of the ORPS reports identified that eight of the 22 incidents (36%) directly involved subcontractors, indicated evidence of a recurring problem specific to subcontractor management. ORPS Recurring Report SC-BSO--LBL-EHS-2007-0006 was generated to address this issue.

The FY07 4th Quarter reporting period also indicated a potential issue specific to penetration permit violations. An effectiveness review was initiated during December 2007 to determine whether the corrective actions developed to address the issues identified in ORPS reports SC-BSO--LBL-ENG-2007-0001 and SC-BSO--LBL-OPER-2007-0003 have been effective in preventing the recurrence.

1.0 ORPS REPORTABLE INCIDENTS

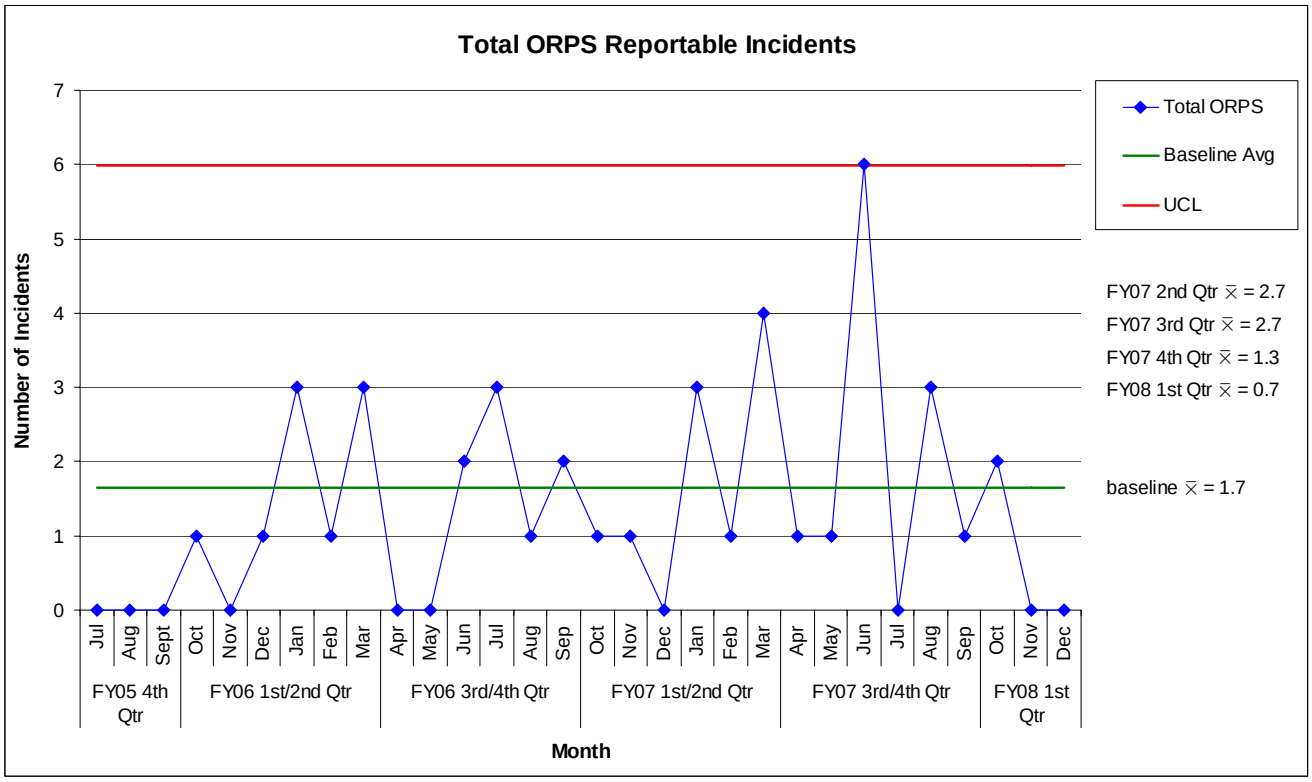

Figure 1.1

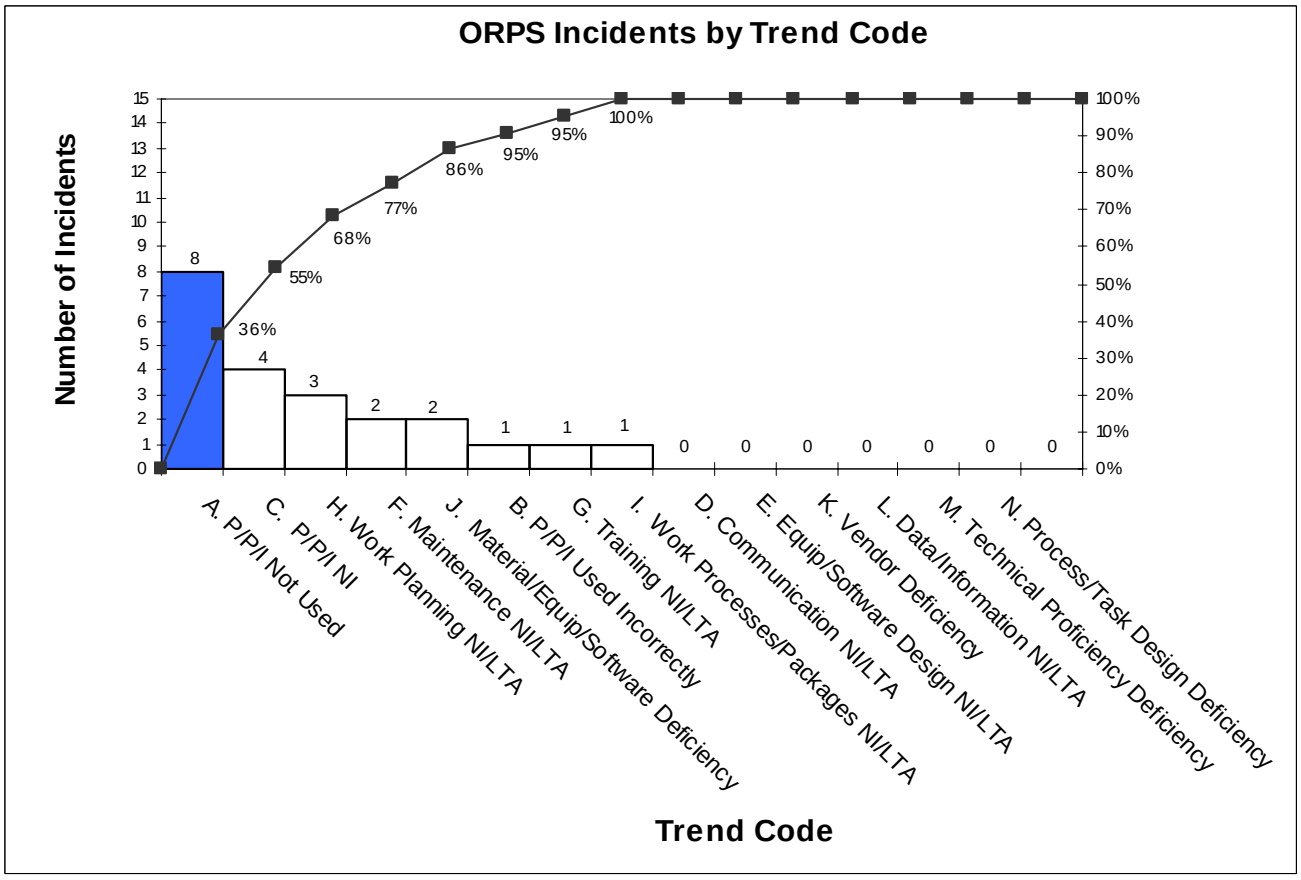

Figure 1.2

Analysis:

The total number of ORPS reports during FY08 1st Quarter reporting period is 22, a decrease from the 26 reports identified during the FY07 4th Quarter reporting period (October 1, 2007 – September 30, 2007).

Figure 1.1 identifies the upper control limit (UCL), which is three standard deviations above the baseline mean, 5.99. In June 2007, an adverse statistical trend was detected when the number of incidents exceeded the UCL. Analysis of the data determined that a recurring electrical problem existed, for which ORPS Recurring Report SC-BSO--LBL-EHS-2007-0005 was generated. No other statistical trends are identified.

Two ORPS reports were generated in October 2007, one to address the recurring problem with subcontractor management (SC-BSO--LBL-EHS-2007-0006), identified during the FY07 4th Quarter reporting period, and the other to address the City of Berkeley, California inspection of Fixed Treatment Units (FTUs), which resulted in two deficiencies (SC-BSO--LBL-ENG-2007-0003). These deficiencies included failure to label an FTU and failure to inspect and test leak test probes as required.

Figure 1.2 represents a Pareto Chart, which breaks down the total data set by Trend Code. 36% of the ORPS incidents were categorized as Trend Code "A. Policies/Procedures/Instructions Not Used". Four of the eight incidents are a result of regulatory agency inspections, all of which are specific to waste management. Three of the eight incidents are specific to penetration permit violations, identified as a potential issue during the FY07 4th Quarter reporting period, which have been addressed by the December effectiveness review. And, the last incident is specific to electrical safety, which is currently being addressed by the ORPS Recurring Report SC-BSO--LBL-EHS-2007-0005.

ORPS Report SC-BSO--LBL-EHS-2007-0002 was generated to address a Consent Order issued by the California Department of Toxic Substances Control (DTSC) to LBNL in March 2007 for recurring problems with hazardous waste management, which resulted in a $28,000 fine. Specifically:1) on five separate occasions LBNL shipped hazardous waste, without a manifest, to a location that was not authorized to accept off-site hazardous waste; 2) contrary to the Hazardous Waste Permit, LBNL received hazardous waste generated outside the boundaries of LBNL; 3) contrary to the Hazardous Waste Permit, LBNL shipped hazardous waste to its main site; and 4) on four occasions, LBNL retained hazardous waste in Satellite Accumulations Areas (SAAs) in excess of one year. The violations identified in this Consent Order were originally identified in inspections that were performed between 2003 and 2005, which significantly precedes the 12 month evaluation period for the current reporting period. Therefore, this ORPS was not considered in the analysis to determine if a potential waste management issue exists.

Analysis of the three remaining waste management ORPS incidents indicate that they share additional common causes such as circumstance (regulatory agency inspections resulting in notices of violation) and ISM Code (Core Function 4, Work Within Established Controls). This analysis indicates that a potential issue regarding waste management exists, which warrants continued monitoring. Details of the incidents are found below.

- ORPS Report SC-BSO--LBL-EHS-2007-0001 addresses a California DTSC inspection letter issued to LBNL in March 2007, regarding the failure to label two SAAs containers.

- ORPS Report SC-BSO--LBL-EHS-2007-0001 addresses multiple violations identified from two annual California Department of Health Medical Waste management Program Inspections, which evaluated the main LBNL facility, the Potter Street facility and Donner Laboratory. These violations included the use of unallowable swing top containers, improper disposal of sharps waste, lack of labels on biohazardous waste containers, reuse of sharps waste containers for

non-regulated sharps waste, and improper transportation of red back biohazardous waste to storage areas.

- ORPS Report SC-BSO--LBL-ENG-2007-0003 addresses a City of Berkeley inspection of FTUs where two violations were identified including labeling of the FTU and failure to inspect and test leak test probes as required.

2.0 PAAA NTS REPORTABLE INCIDENTS

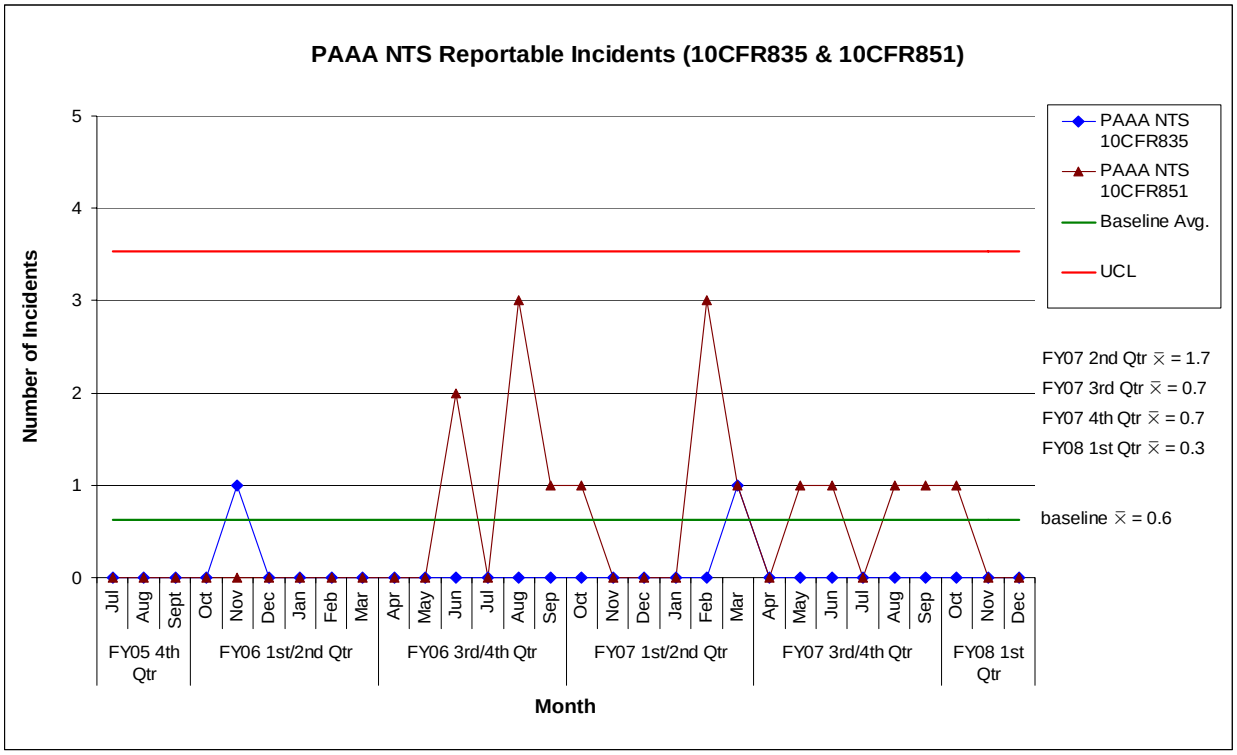

Figure 2.1

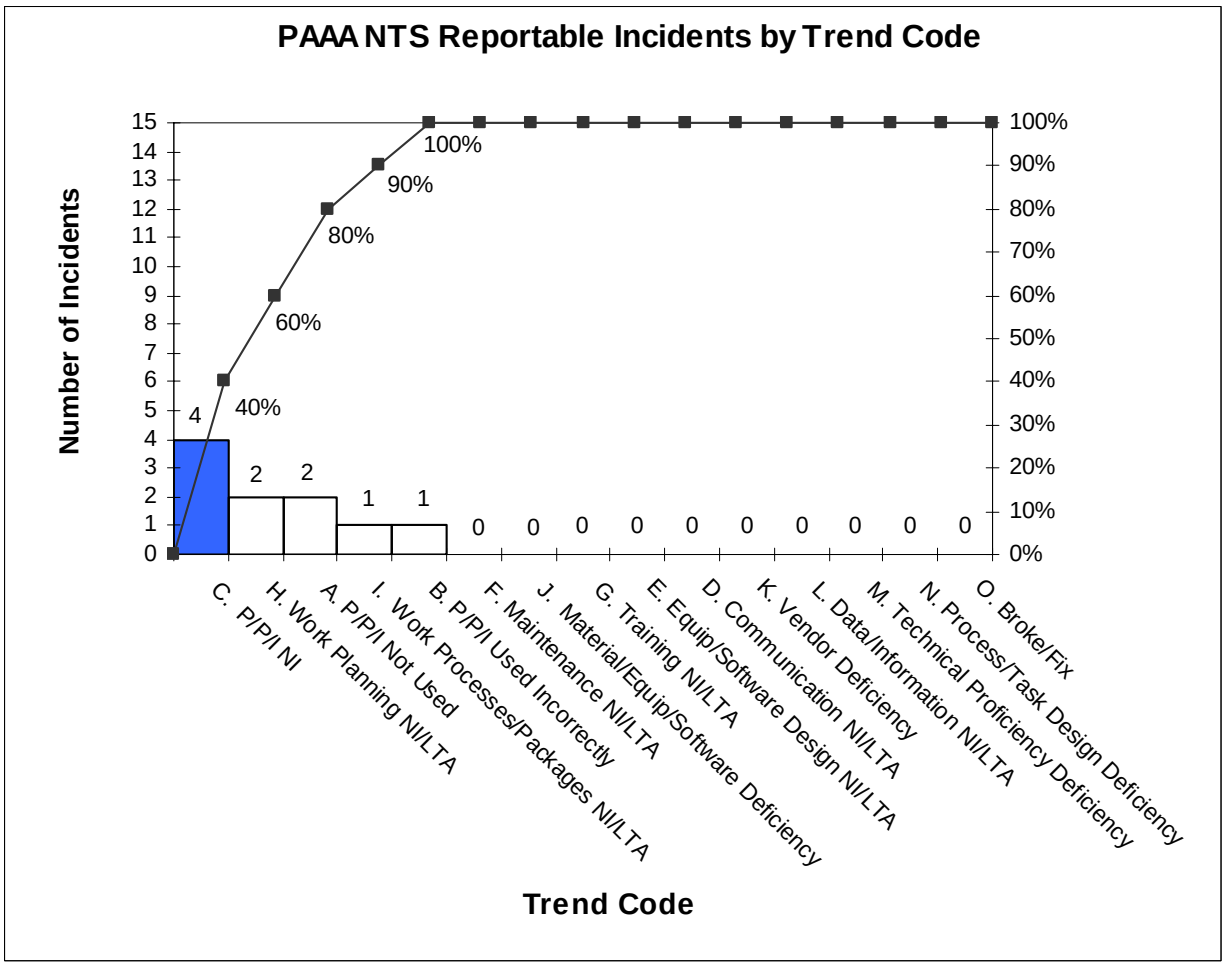

Figure 2.2

Analysis

While represented on Figure 2.1, seven 10CFR851 PAAA NTS Reportable Incidents are duplicates of ORPS reportable Incidents. (See Attachment 1 for details on duplicate incidents.) The 10CFR851 NTS-reportable incident identified in October was specific to subcontractor management, and is a duplicate of the ORPS Category R report (SC-BSO--LBL-EHS-2007-0006) for recurring subcontractor management problems.

Based on the statistical analysis, no statistical trend for the FY08 1st Quarter reporting period exists.

Figure 2.2 indicates four incidents are categorized as trend code; “C. Policies/Procedures/ Instructions Need Improvement”. Two of these incidents were specific to electrical safety. One was regarding the lack of an approval process for non-National Recognized Testing Laboratories (NTRL) electrical equipment and the other was the lack of an Electrical Authority Having Jurisdiction. There were no commonalities shared by these two incidents outside of the general subject matter. The other two incidents were specific to the lack of a Job Hazard Analysis program and subcontractor safety management. Review of the division, subject matter, and circumstances determined that no evidence of a recurring issue exists in this area.

3.0 ORPS AND PAAA NTS REPORTABLE INCIDENTS

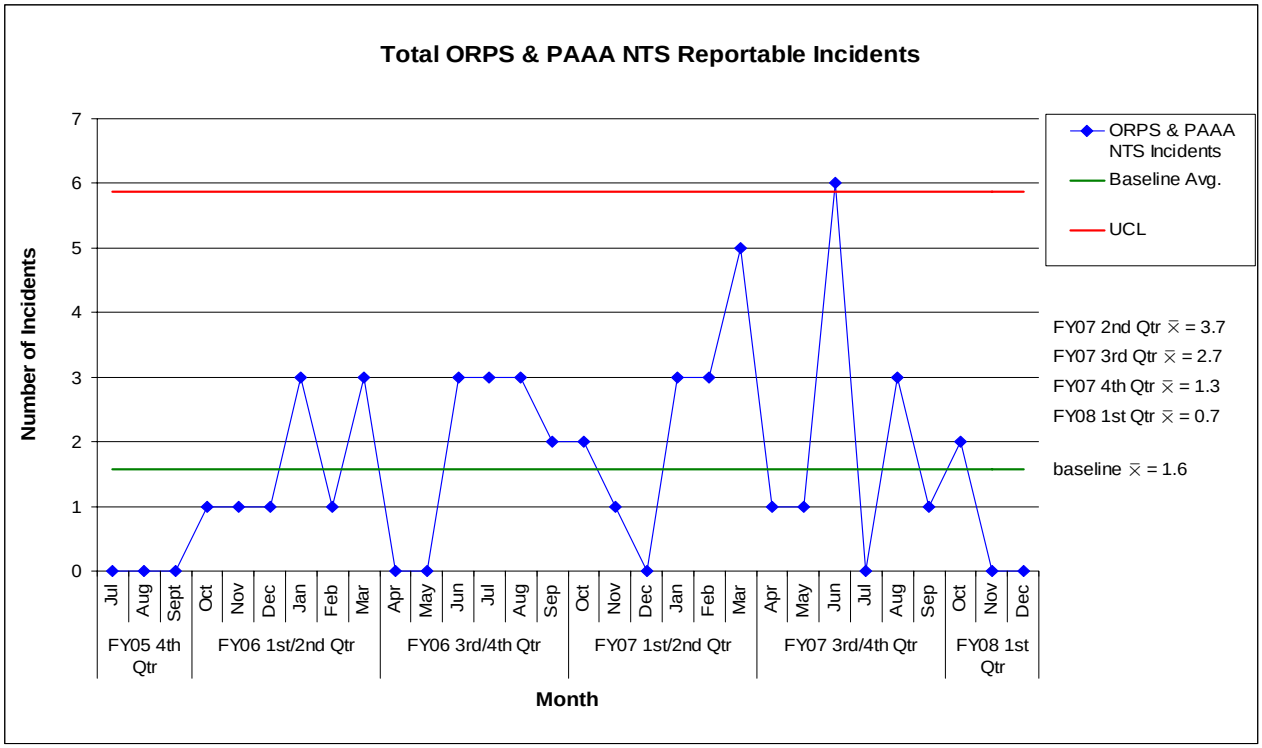

Figure 3.1

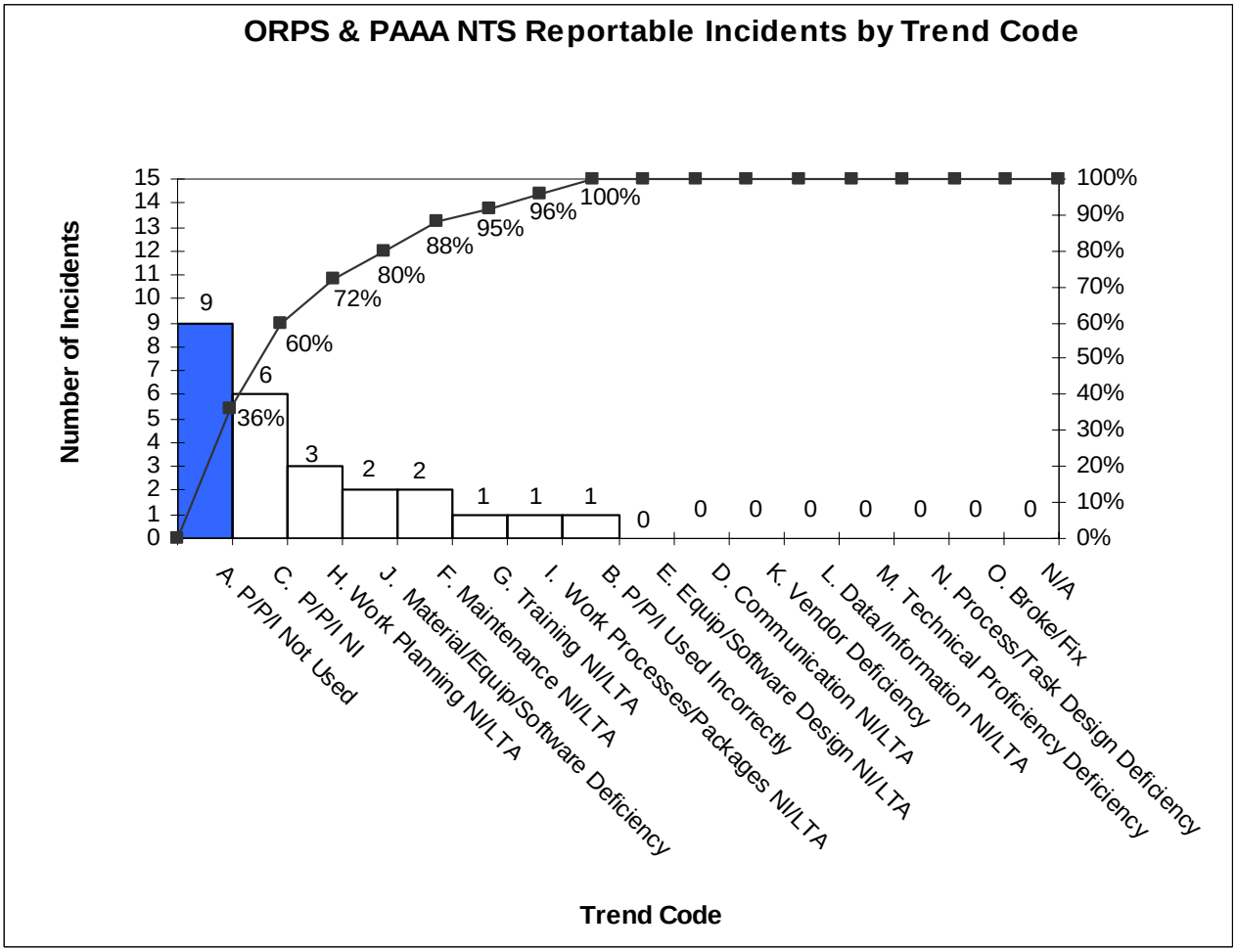

Figure 3.2

Analysis:

During this reporting period, seven ORPS and PAAA NTS-reportable incidents were duplicated. (See Attachment 1 for details on duplicate incidents.) The number of total incidents decreased from 26 to 25 from the FY07 4th Quarter reporting period (October 1, 2007 – September 30, 2007) to the current reporting period.

Figure 3.1 identifies the upper control limit (UCL), which is three standard deviations above the baseline mean, 5.99. In June 2007, an adverse statistical trend was detected when the number of incidents exceeded the UCL. Analysis of the data determined that a recurring electrical problem existed, for which ORPS Recurring Report SC-BSO—LBL-EHS-2007-0005 was generated. No other statistical trends are identified.

Figure 3.2 represents a Pareto Chart, which breaks down the total data set by Trend Code. 36% of the incidents are categorized as Trend Code "A. Policies/Procedures/Instructions Not Used". Eight of the nine incidents are ORPS reports, and the remaining one is a 10CFR835 PAAA NTS report.

The 10CFR835 PAAA NTS incident, identified in early March 2007, was specific to use of a non-DOELAP accredited dosimeter.

The eight ORPS incidents include one electrical issue, three penetration violations and four waste management issues. The electrical issue is currently being addressed by the ORPS Recurring Report SC-BSO--LBL-EHS-2007-0005. The penetration permit violations, which were identified as a potential issue during the FY07 4th Quarter reporting period, are being addressed by the December 2007 effectiveness review. Analysis of the remaining four ORPS reports indicates that there is a potential issue with regard to waste management. Details regarding this issue are found in the Analysis portion of Section 1.0.

ATTACHMENT 1 – ORPS AND PAAA NTS REPORTABLE INCIDENTS FOR OCT 06 – SEPT 07

Item	Title	Report #	FY	Disc. Date	PAAA Duplicates
1.	Discovery of suspect/counterfeit pipe fittings and steel pipe	ORPS: OPER-07-01	FY07	18-Jan	
2.	Potential Exposure to Nitric and Hydrofluoric Acid Vapor	ORPS: MSD-07-01	FY07	23-Jan	
3.	B58A-102 ground penetration permit administrative error	ORPS: ENG-07-01	FY07	30-Jan	
4.	Electrical Equipment AHJ Approval Program (NEC 110.2) LTA	NTS: EHS-07-02	FY07	6-Feb	
5.	Job Hazard Analysis (JHA)Program Implementation LTA	NTS: EHS-07-01	FY07	23-Feb	
6.	Building 88 Vault 115volt electrical shock	ORPS: ENG-07-02	FY07	26-Feb	NTS: EHS-07-03
7.	Use of Non-DOELAP Dosimeter	NTS: EHS-07-04	FY07	7-Mar	
8.	LOTO violation results in near miss	ORPS: OPER-07-02	FY07	23-Mar	NTS: EHS-07-05
9.	Class II Violations of RCRA Part B Permit	ORPS: EHS-07-01	FY07	27-Mar	
10.	DTSC consent order/ fines	ORPS: EHS-07-02	FY07	29-Mar	
11.	Management Concern for Penetration Permit Violation	ORPS: OPER-07-03	FY07	30-Mar	
12.	Management concern involving vendor working on electrically energized equipment	ORPS: MSD-07-02	FY07	6-Apr	
13.	Employee broke leg falling off personal transporter (Segway)	ORPS: EHS-07-03	FY07	18-May	
14.	B71 Lead Air Sample Level Exceeds OSHA limit	ORPS: OPER-07-04	FY07	4-Jun	NTS: EHS-07-06
15.	Department of Health Services Notice of Violations	ORPS: EHS-07-04	FY07	14-Jun	
16.	Sanitary sewer overflow (SSO) on site	ORPS: OPER-07-05	FY07	25-Jun	
17.	Sanitary sewer overflow (SSO) on site	ORPS: OPER-07-06	FY07	26-Jun	
18.	Employee slipped and fell on wet floor	ORPS: LSD-07-01	FY07	27-Jun	
19.	Student assistant received electrical shock	ORPS: EETD-07-01	FY07	29-Jun	NTS: EHS-07-07
20.	AA Lithium iron battery exploded	ORPS: OPER-07-07	FY07	3-Aug	
21.	Recurrent Electrical Safety Issues	ORPS: EHS-07-05	FY07	9-Aug	NTS: EHS-07-10
22.	Mercury Spill at Molecular Foundry	ORPS: MSD-07-03	FY07	20-Aug	NTS: EHS-07-08
23.	Underground Pipe Plug Broken by Excavator During Demolition Operation	ORPS: OPER-07-08	FY07	7-Sept	
24.	City Inspection Cites Violation	ORPS: ENG-07-03	FY08	11-Oct	
25.	Recurring Subcontractor Safety Problems	ORPS: EHS-07-06	FY08	19-Oct	NTS:EHS-07-09

ATTACHMENT 2 – TREND CODES

Trend Code
A. Policies/Procedures/Instructions Not Used
B. Policies/Procedures/Instructions Used Incorrectly
C. Policies/Procedures/Instructions Need Improvement
D. Communication Needs Improvement /Less Than Adequate
E. Equipment/Software Design Needs Improvement /Less Than Adequate
F. Maintenance Needs Improvement /Less Than Adequate
G. Training Needs Improvement /Less Than Adequate
H. Work Planning Needs Improvement /Less Than Adequate
I. Work Processes/Packages Need Improvement /Less Than Adequate
J. Material/Equipment/Software Deficiency
K. Vendor Deficiency
L. Data/Information Needs Improvement /Less Than Adequate
M. Technical Proficiency Deficiency
N. Process/Task Design Deficiency
O. Broke/Fix